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at all, particularly in places where either sharks or otters occur.

It is not claimed that sea lions in their native element never eat fish; at the same time the only actual evidence we have on the subject fails utterly to substantiate the allegations of the fishermen. On the contrary, all of the twenty-five stomachs of sea lions examined by Professor Dyche contained remains of squids or cuttle fishes, and not one contained so much as the scale or bone of a fish. And is it not significant that in former years, when sea lions were much more plentiful than now, salmon also were vastly more abundant? If the fishermen will look into their own habits and customs during the past twenty-five years, it is believed that the cause of decrease of the salmon will not be difficult to find, and this without charging the decrease to the inoffensive sea lions, whose rookeries constitute one of the greatest attractions to the visitor on the California coast.

C. HART MERRIAM.

SCIENTIFIC BOOKS.

The Seri Indians. By W J McGEE. Extract from the Seventeenth Annual Report of the Bureau of American Ethnology. Washington, Government Printing Office, 1898 [1901]. Pp. 344, with 62 plates, and 42 figures in the text.

Seldom has one to chronicle the appearance of a work so thoroughly 'a contribution to human knowledge' as is this modestly titled essay. Brinton, in his 'American Race' (N. Y., 1891), styles the Seris 'a Yuma folk,' and consecrates a few lines to the enumeration of their not very prepossessing characteristics. Indeed, although these Indians came into contact with the whites in 1530-1540, they remained till towards the close of the nineteenth century perhaps the least studied of all the North American aborigines. The expeditions sent out in 1894 and 1895 by the Bureau of American Ethnology, under the efficient leadership of Dr. McGee, have resulted in the shedding of a flood of light upon one of the most interesting and

remarkable groups of savages on the globe. After a brief introduction dealing with the salient features of the people, geographical nomenclature, etc., come sections on habitat (pp. 22-50), summary history (pp. 51-122); tribal features—nomenclature, external relations, population (pp. 123-135); somatic characters—stature, color, etc., skull, skeleton, pedestrian habit, fleetness and endurance, absence of 'knife sense,' race sense, cheirization, alternation of states (pp. 136-163); demotic characters—symbolism and decoration, industries and industrial products, social organization, language (pp. 164-344). Throughout these pages one is made aware of that noteworthy combination of keenness of perception and aptness of expression, that harmonious unity of the explorer and the recorder, which make the author's anthropological publications rank with the most suggestive and most stimulating scientific literature of the day.

The Seris (the word is Opata and means 'spry'), or, as they call themselves (by a name including fire and the animal world) *K'm káak*, 'our-great-mother-folk-here,' inhabit Tiburon Island (some 30 miles in length by from 12 to 20 in width) in the Gulf of California, and a limited adjacent area on the mainland of the Mexican State of Sonora. Two centuries ago they are said to have numbered several thousands, but almost uninterrupted warfare has reduced them to some 350, of whom not more than 75 are adult males or warriors; and, notwithstanding the fact that, under the renewed isolation of the last decade or two, they seem to have rallied their strength a little, or at least to have held their own, Dr. McGee holds out to us no other prospect than the 'early extinction of one of the most strongly marked and distinctive of aboriginal tribes.' In the historical summary the chief events in the contact of Caucasians and Seris, with their terrible results, in so far as the latter are concerned, are outlined, the concessions (now reported) of Seri territory to American speculators may be the beginning of the end. If so, the Seris will not have passed away without meeting an able and sympathetic chronicler. The importance of Dr. McGee's monograph for those engaged in the study of the phenomena of heredity and

environment, of somatic and mental relationship, of tribal and individual expressions, of isolation and *Wanderlust*, of race antagonisms and human affections, of labor and repose, of the matter-of-fact and the mystical, can hardly be exaggerated, since, as he claims, with seeming justice, 'the Seri must be assigned to the initial place in the scale of development represented by the American aborigines, and hence to the lowest recognized phase of savagery' (p. 295). The environment of the Seris consists of the broad Desierto Encinas (the eastern boundary), the mountainous zone of Sierra Seri, Tiburon Island (with adjacent islets), the navigable straits and bays about the islands and the mainland. The mainland is a sort of a dependency, for Tiburon Island (the eastern shore especially) is the real home of the Seris. To their dwelling chiefly on the prolific seashore of Tiburon Dr. McGee attributes the fact that the Seris 'never learned the hard lesson of desert solidarity,' and so have 'held aloof from that communality of the deserts which has brought so many tribes into union with each other and with their animal and vegetal neighbors through common strife against the common enemies of sun and sand—the communality expressed in the distribution of vital colonies over arid plains, in the toleration and domestication of animals, in the development of agriculture, and eventually in the shaping of a comprehensive solidarity, with the intelligence of the highest organisms as the controlling factor' (p. 133). The isolation of the Seris is reflected in their enmity towards aliens—the Papagos, the Yaquis, the Caucasians—an enmity which removes them in thought and life from all contemporaries so that 'they far out-Ishmael the Ishmael of old on Araby's deserts.' The local antipathy is even greater than the race antagonism for the whites, who have been sometimes tolerated for a time as food-bringers or wonder-workers. This antagonism amounts to obsession, and is 'crystallized into a cult'; yet among themselves, we are told, 'they were fairly cheerful, and the families were unobtrusively affectionate'—maternal affection, especially, is strong.

The waters about Seriland, as some of the Spanish names—El Infiernillo, Sal-si-puedes,

etc.—indicate, are very stormy and dangerous to navigation, but 'the fierce currents and frequent storms of the region * * * have undoubtedly contributed to the development of the peculiarly light, strong and serviceable water-craft [balsas] of the aboriginal navigators among the islands' (p. 45). The primary resource of Seriland is potable water, and the springs and water-holes are few and far between. Yet it is the tribal policy (based perhaps on military instincts) to 'locate habitations in places surprisingly remote from running water' (p. 183). This has naturally developed the water-industry, and it is not strange that the Seris 'are essentially and primarily water-carriers, and all their other industries are subordinated to this function.' As remarkable as their conquest of the stormy sea is the Seri invention of an olla or water-jar, which, in so far as capacity is related to weight of vessel, is about twice as economical as the corresponding ware of the Pueblos or the Papagos. These Indians seem to have conquered the desert also in this respect. The basketry of the Seris is likewise of very noticeable lightness.

Among the most striking physical characteristics of the Seris are 'the noble stature and erect yet easy carriage,' the dark color of the skin, breadth and depth of chest, 'slenderness of limbs and disproportionately large size of extremities (especially the feet),' long and luxuriant hair, and 'a peculiar movement in walking and running.' But a single Seri skeleton has been scientifically studied, and the details of the measurements, as given by Dr. Aleš Hrdlička, occupy pages 141–147 of the work under review. The skeletal facts confirm the deductions from the living body as to the slowness of the organism in attaining maturity—somatic growth continues 'throughout an exceptionally long term in proportion to other stages in the life of the individual.' The range of variation in stature, color, etc., is less than is the case with neighboring Indian tribes. The segregative habit and antagonism to aliens—'protean manifestations of race-pride'—amount to what Dr. McGee calls *race-sense*. Indeed, the Seri are so close to each other and so far from all others that a member of the tribe 'can no more

control the involuntary snarl and growl at the approach of the alien than can the hunting dog at sight or smell of the timber-wolf' (p. 155). The pedestrian habit and the adaptation of the body in its movements (simulating almost the antelope) to the needs of progression in a particular environment, are quite remarkable, and the skill of the Seri runners, like their swiftness of foot, is almost incredible—in men, women and children, the pedestrian art is highly developed. Another conspicuous peculiarity of these Indians is 'habitual use of hands and teeth in lieu of the implements characteristic of even the lowly culture found among most primitive tribes.' They practically lack the 'knife sense,' and are, moreover, conspicuously unskilful in all mechanical operations involving the use of tools. Seri warriors are said often to have recourse to tooth and nail in battle.

Except face-painting, which is practically confined to the female members of the tribe (being of blood-marking significance; the 'elder-women' are very prominent), and recalls the markings of animals, decoration or tangible symbolism is rare among the Seris. Not only are these people less advanced in æsthetic development than other American Indian tribes, but they are also 'at the bottom of the scale in the ratio of æsthetic to industrial motives' (p. 176).

A dearth of fishing tackle is also noted, but in the capture of the sea-turtle (a most prominent article of diet), the adaptation of means to ends is beautifully illustrated: 'The graceful and effective balsa is in large measure an appurtenance of the industry; the harpoon is hardly heavier and is much simpler than a trout-fishing tackle, yet serves for the certain capture of a 200-pound turtle; and the art of fishing for a quarry, so shy and elusive that Caucasians may spend weeks on the shores without seeing a specimen, is reduced to a perfection even transcending such artifacts as the light harpoon and fragile olla' (p. 189). The ingenious use of the young or crippled pelican, as an aid in the procurement of food may possibly have been borrowed from other California tribes. The arrow, the weapon of the chase, is, perhaps, even more notably perfected than the

harpoon. Between the arrow and the harpoon, on the one hand, and the fire-drill on the other, there is a remarkable structural homology, the harpoon having been in all probability the primary device. With the Seris, the bow has now replaced the atlatl, or throwing stick formerly in use. In contrast with the arrow, the bow is a rude and clumsy device. The posture of the Seri archer is one of the most remarkable known. The development of the hunt has apparently 'blinded the Seri to the rudiments of agriculture,' and goes far to explain 'their intolerance of all animal associates, save the sly coyote that habitually hides its travail and suckling in the wilderness, and perhaps the deified pelican' (p. 203). The hunting of the horse is an acquisition of post-Columbian date, in which these Indians have developed rare skill.

As to food, the Seris are omnivorous, and their systematic scatophagy—the 'second harvest' of the tuna is carefully stored—gives them almost a bestial character, though in this peculiar practice the beginnings of a thrif-sense and the germs of industrial economy are possibly to be seen. The 'houses' of the Seris are of the rudest sort, merely shelters adapted to the roving needs of the tribe, but it is very interesting to learn that 'placing and fitting of the beams and tie-sticks are accompanied by a chant, usually led by the eldest matron of the group,'—for women are the builders here. The chant is probably a very primitive 'worksong' of the sort Professor Bücher has recently discussed. The absence of the breech-clout (so common an article of primitive clothing) is, Dr. McGee thinks, accounted for by conditions of environment making 'the free-flowing and easily removable apron' of most service as a protective dress. An autochthonous dress of the Seris is the pelican-skin kilt, while as cords, fasteners, etc., fabrications of human hair are abundantly employed.

In so far as their peaceful industries are concerned, the Seris are among the most primitive of known tribes, and 'combine the features of the zoomimic and protolithic stages more completely than any other known folk, and in such wise as to reveal the relations between these stages and that next higher in the series with

unparalleled clearness' (p. 253). Their implements of stone reflect the conditions of their habitat remarkably well.

Seri warfares, like the hunting customs of the tribe, is 'largely sortilegic,' and the warfare of the tribe (devoid of military tactics in the strict sense of the term) is 'merely an intensified counterpart of their chase' (p. 261). To the 'blood-craze' of the hunters corresponds the 'war-frenzy' of the fighters. Poor in offensive and in defensive devices, the Seri Indians, apart from the natural conditions of their habitat, find their effective protection in 'their fleetness coupled with their habitual and constitutional timidity.' The famous 'poison arrows' of the Seris are discussed at pages 255-261, and a description given of the loathsome mess compounded by the medicine-man for tipping them.

The most interesting fact in Seri sociology is 'prominence of the females, especially the elderwomen, in the management of every-day affairs' (house building, transportation of family property, regulation of personal conduct, productive labor, shamanism, proprietary affairs, legislative and judicative functions, etc.). The social unit appears to be the maternal clan, with certain modifications and additions due to the general feeling of the tribe, the clan-mother being the central figure of the group, but the executive power residing in her brothers in the order of seniority. In other words, 'while the personal arrangement of the group is maternal, the appellate administration is fraternal' (p. 275). The contests for the chiefship are sometimes very protracted, but 'the choice really reflects physical force.' The process of adoption, so important generally with primitive peoples, seems 'entirely foreign to the thoughts of the tribe,' only a few sporadic and uncertain cases being on record. Since there is a surplus of women among the Seris, polygamy naturally prevails, although the practice is perhaps incidental and of comparatively recent origin. Of the sexual unions of these Indians the author remarks (p. 279): 'The primary mating of the Seri is attended by observances so elaborate as to show that marriage is one of the profoundest sacraments of the tribe, penetrating the innermost recesses of tribal thought, and interwoven

with the essential fibers of tribal existence. Few, if any, other peoples devote such anxious care to their mating as do the Seri [the author compares them with the Australian aborigines]; and among no other known tribe or folk is the moral aspect of conjugal union so rigorously guarded by collective action and individual devotion.' The premarital tests are severe, and the conditions of the probationary period are such as to demand indubitable proof of control of sexual passion. Of the mortuary customs of the Seris, the most remarkable feature is 'the special dignification of females in respect to funerary rites,' something without exact parallel among other American aborigines. Traces of at least an inchoate belief in a future life, and of strong veneration for, or fear of, the spirits of the departed (matrons in particular), were noted, as indeed is indicated by certain funeral customs.

The Seri linguistic material was submitted to Mr. Hewitt, of the Bureau of American Ethnology, whose thorough-going comparative study (rather too decided, perhaps, in some respects) occupies pages 299-344. The result is to settle the status of Seri speech as an independent tongue, and not a Yuman dialect, as some have thought. Taken altogether, the Seri mind shows itself to be 'local, chance-dominated, exceeding lowly, and especially autochthonal in its contents and workings.' The author's views as to the meanings of the correlation of race-sense and stirpiculture are of great interest to all students of racial and individual development (p. 162): 'Even if the measure of the incarnation of ideals be reduced to the lowest maximum consistent with human knowledge it remains true that the progeny of successive generations are not the offspring of average parents, but of pairs at the perfection and conjugal culmination of their virile and muliebrile excellencies; so that the generations must run in courses of cumulatively increasing racial (or human) perfection, under a general law of conjugal conation.' Well, indeed, do the Seri Indians illustrate the incarnation of primitive ideals, as indeed the Greeks once did, and with not such moral descent as the latter sustained.

Another general fact concerning the Seris, of great importance to the psychologist, and

suggesting at once comparisons with childhood and the phenomena of genius, is the marked alternation of intense activity and complete repose—activity measured by hours, intervals of rest measured by days. Equally noteworthy is the rapidity of change from one state to the other. According to Dr. McGee, “the Seri are at once the swiftest and the laziest, the strongest and the most inert, the most warlike and the most docile of tribesmen; and their transitions from rôle to rôle are singularly capricious and sudden” (p. 156). This throws a new light upon the question of savage laziness and hints how unfair some of the earlier writers have been in picturing primitive man as uniformly inert. This essay is emphatically a valuable addition to the scientific literature about primitive man. The appearance of the author's companion study of the Papagos will be awaited with great interest.

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Verhandlungen der deutschen Zoologischen Gesellschaft auf der zehnten Jahresversammlung zu Graz, den 18 bis 20 April, 1900. Im Auftrage der Gesellschaft herausgegeben von Prof. Dr. J. W. Spengel, Schriftführer der Gesellschaft. Mit in den Text gedruckten Figuren. Leipzig, Verlag von Wilhelm Englemann. 1900. Pp. 170. Preis M. 6.

The most important matter brought before the tenth meeting of the German Zoological Society at Graz was the report of Professor Franz Ellhard Schultze, editor-in-chief of *Das Tierreich*. The year preceding the report witnessed the publication of several sections of this great work upon systematic zoology, the most notable being that of Labbé upon the ‘Sporozoa’ and that of Michaelson upon the ‘Oligochæta.’ That substantial progress will be made in the near future is seen in the fact that the following manuscripts were ready for the press: ‘Hydrachnida’ by Piersig, ‘Halicarida’ by Lohmann, ‘Nemertina’ by Bürger, the first division of the ‘Amphipoda’ by Stebbing, the ‘Palpigrada’ and ‘Solifuga’ by Kraepelin, the ‘Libytheida’ by Pagenstecher. The following sections are now in the process of edi-

torial revision: calcareous sponges by Breitfuss, the second division of the ‘Copepoda’ by Giesbrecht and Schmeil, the second division of the ‘Decapoda’ by Ortmann, the first division of the ‘Formicida’ by Emery, the ‘Pneumonopoma’ by Kobelt, the ‘Rodentia’ by Trouessart, the ‘Rhizopoda reticulosa’ by Rhumbler, and the first division of the ‘Apida’ by Friese.

To insure prompt publication of the accumulating manuscript is a problem for whose solution the recommendation is made that a competent ‘Superreviser, Secretar, and Bureaucchef’ be appointed to assist the editorial bureau in the laborious work of securing uniformity in matters of terminology, nomenclature and bibliography, and to maintain the unity of this monumental work which the German society has undertaken. Arrangements were consummated whereby in the future the *Tierreich* will be issued conjointly by the Society and the Royal Prussian Academy of Sciences, as will be shown by the title page of future issues.

The principal address of the session was given by Professor Karl Heider on ‘Das Determinationsproblem,’ a masterly review of the whole subject of experimental morphology. In a second paper Professor Heider calls attention to a new and strange genus of trematodes parasitic in the dolphin. This new type, *Braunina*, is peculiar in possessing a pedicel and a mantle developed to a degree hitherto unknown in the group, while suckers are entirely lacking.

Herr Künkel has investigated the capacity of *Limax* for the absorption of water which enters the body not only through the mouth, but also through the skin by absorption. The volume of the slug may be increased by this process as much as 209% while the specific gravity is correspondingly decreased and feeding activities are suspended until the water is reduced. The consumption of oxygen in respiration was studied and the rate of exhaustion of the air was found to be 0.36 ccm. per hour for each cubic centimeter of the slug's body. The respiratory process is carried on not only in the air-chamber, but also on the surface of the body.

Dr. Hans Rabl finds no evidence to support the ectodermal origin of the pigment cells in embryos of cephalopods. From their first